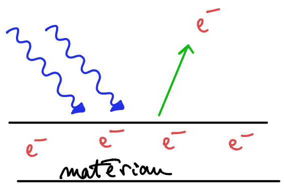
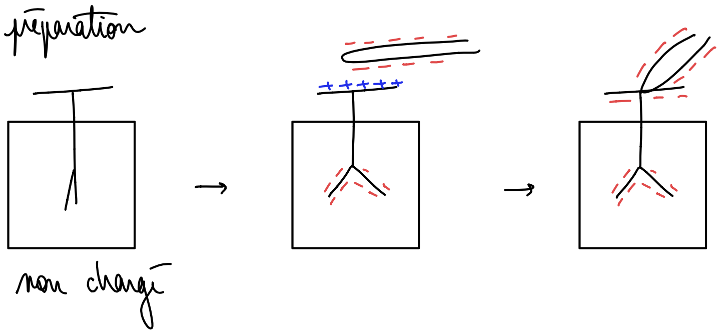
I. 1.

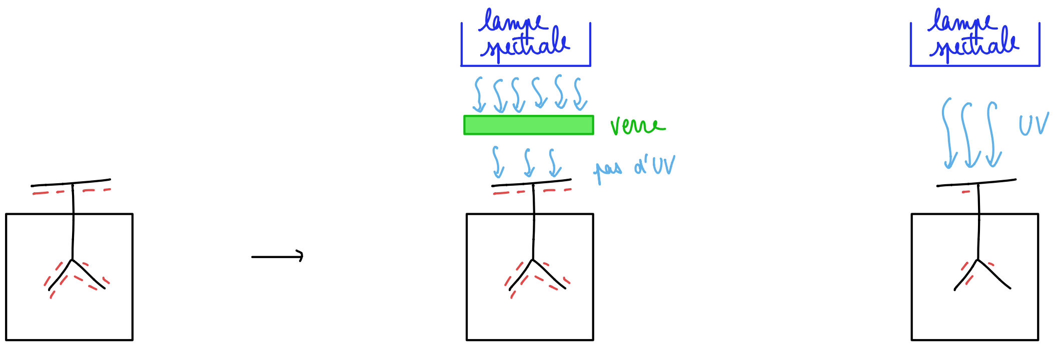


e⁻
e⁻ e⁻ e⁻ e⁻
matériau

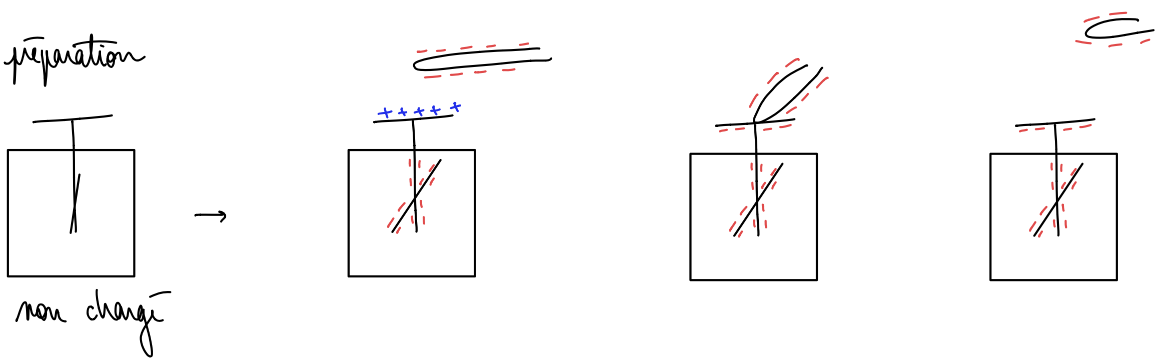
2.



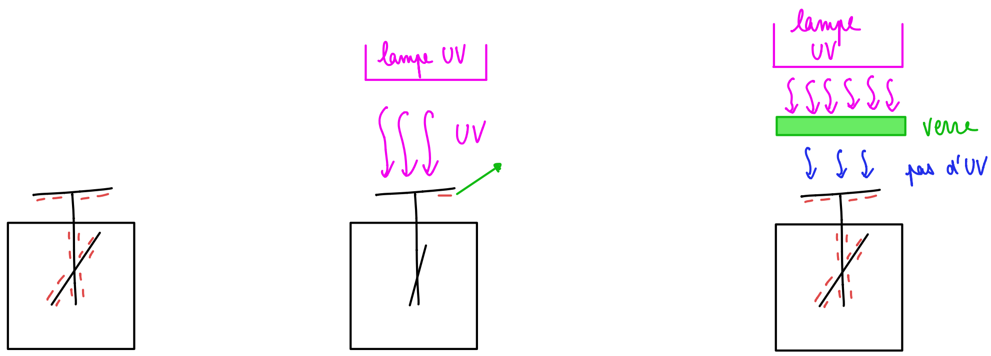
préparation
+ + + + +
non chargé



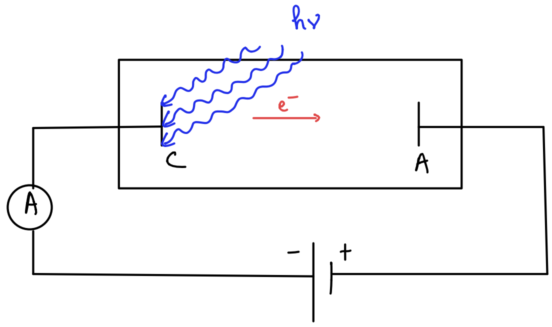
lampe spectrale
verre
pas d'UV
lampe spectrale
UV

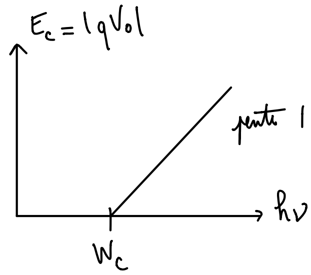


préparation
+ + + + +
non chargé

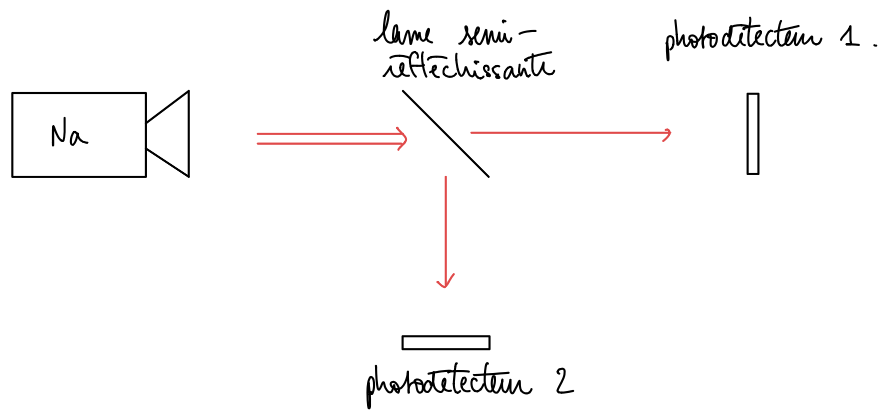


lampe UV
UV
lampe UV
verre
pas d'UV





3.



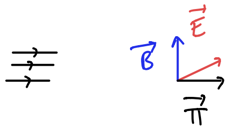
$$g^{(2)}(\tau) \equiv \frac{\langle \Delta I_1(t)\, \Delta I_2(t+\tau) \rangle}{\langle I_1(t) \rangle \langle I_2(t+\tau) \rangle} \quad \text{où} \quad \Delta I \equiv I - \langle I \rangle$$

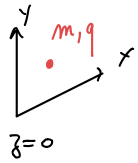
classique

$\Downarrow$

$g^{(2)}(\tau=0) = 0.4 \rightarrow$ anticorrélation $\quad \left(g^{(2)}(\tau) \geq 1 \right)$

II 1.





On considère une OPPH selon Oz arrivant sur une particule (m,q) maintenue dans le plan $z=0$

$$\vec{E}(z,t) = E_0 \cos(\omega t - kz)\,\vec{u}_x$$
$$\vec{B} = \frac{1}{c}\vec{u}_z \wedge \vec{E}$$

• $$\Delta\vec{p}_{\text{Lorentz}} = \int_0^T \vec{F}.dt = \int_0^T \left(q\vec{v}\wedge\vec{B}(0,t)\right) dt = \int_0^T \frac{q}{c}\vec{v}\wedge\left(\vec{u}_z\wedge\vec{E}(0,t)\right) dt = \int_0^T \frac{q}{c}\underbrace{\left(\vec{v}.\vec{E}(0,t)\right)}_{\text{puissance}}\vec{u}_z\,dt - \int_0^T \frac{q}{c}\underbrace{(\vec{v}.\vec{u}_z)}_{0}\vec{E}(0,t)dt$$

$\int_0^T \vec{E}(0,t)\,dt = 0$ périodicité

(la partie magnétique ne travaille pas)

car particule reste à $z=0$

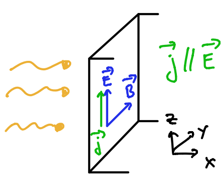
$$\Delta\vec{p} = \frac{W}{c}\vec{u}_z$$

• avec les photons, $W = N h\nu$ (# photons absorbés pendant 1 période)

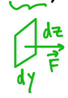
$\Delta\vec{p} = N\vec{p}_{1,\text{photon}}$

$$\boxed{\vec{p}_{1,\text{photon}} = \frac{h\nu}{c}.\vec{u}_z}$$

Pression de Radiation



On veut calculer P_{rad} : $\langle dF\rangle_t = P_{rad}\, dS$,



$$\boxed{P_{rad} = \varepsilon_0 E^2 = 2\frac{\langle|\vec{\Pi}|_{inc}\rangle}{c}}$$

$\langle|\vec{\Pi}|_{inc}\rangle = c.\frac{\varepsilon_0 E^2}{2}$

ingrédients

$d^2F = di\, d\vec{\ell}\wedge\vec{B}$ ← force de Laplace

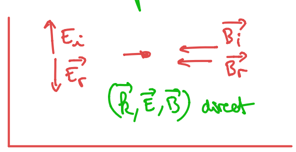
$di = |j|\,dx\,dy$, $d\vec{\ell} = dz\,\vec{e}_z$

$\vec{j} = \frac{1}{\mu_0}\frac{\partial B_y}{\partial x}\vec{e}_z$ ← MA en négligeant $\frac{1}{c^2}\frac{\partial\vec{E}}{\partial t}$ ARQS magnétique

$B_y(x=0) = -\frac{2E_0}{c}\cos(\omega t)$

$B_y(x=\infty) = 0$ (effet de peau)

à la réflexion d'l OPPM



ODG P_{rad} : $\sim 10^{-8}$ Pa

Puissance : laser $\sim$ mW/mm²

soleil $\sim$ 1 kW/m² $\sim$ mW/mm² comme le laser

III) 1.